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10/017,536	10/29/2001	Rajan Kumar	GDS_NP_2001_001	8086

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Rajan Kumar  
18 Buford Road  
Robbinsville, NJ 08691

EXAMINER

LAM, ANN Y

ART UNIT

PAPER NUMBER

1641

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/017,536	<b>Applicant(s)</b> KUMAR, RAJAN	
	<b>Examiner</b> Ann Y. Lam	<b>Art Unit</b> 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,9-13 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) 5-8,14,15,19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-13 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/29/01</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of group I (claims 1-4, 9-13 and 16-18) in the reply filed on October 14, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 5-8, 14, 15, 19 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- (i) in claim 1, the range of larger than 1 micrometer (the range disclosed on page 10, line 9 is insufficient antecedent basis)
- (ii) in claim 3, the range of less than 100 fenestrations (the range disclosed on page 10, line 7 is insufficient antecedent basis)
- (iii) in claim 4, the range of 100 or more fenestrations
- (iv) in claims 10 and 16, the range of less than 0.5 mm thickness (the range disclosed on page 10, line 5 is insufficient antecedent basis)

(v) in claim 16, the range of less than 0.5 mm (the range disclosed on page 10, lines 4-5 is insufficient antecedent basis);

(vi) in claim 17, the range of less than 100 micron thickness (the range disclosed on page 10, line 5 is insufficient antecedent basis)

### ***Claim Objections***

Claims 1-4, 9-13 and 16-18 are objected to because of the following informalities:

(i) in claim 1, line 1, "Any" should be --An--,

in line 1, before "surface", --a—should be inserted,

in line 2, "contains" should be --containing--;

(ii) in claim 2, line 1, "An" should be --The—,

in line 1, --further—should be inserted before "comprising",

in line 1, "of" should be deleted,

in line 1, "the" should be deleted;

(iii) in claim 3, line 1, "An" should be --The—,

In line 1, "comprising a substrate that contains" should be replaced

with --wherein the substrate contains--;

(iv) in claim 4, line 1, "An" should be --The—,

in line 1, "comprising a substrate that" should be replaced with

--wherein the substrate--;

(v) in claim 9, line 1, "An" should be --The—

(vi) in claim 10, line 1, "An" should be --The—,

in line 1, "comprising a substrate with" should be replaced with

--wherein the substrate has--;

(iii) in claim 11, line 1, "Any" should be --A--,

in line 1, the second "of" should be deleted;

(iv) in claim 12, "A" should be --The--,

in line 1, --wherein the different arrays—should be inserted

before "are".

(v) in claim 13, "A" should be --The--,

in line 1, "in which" should be --wherein--,

in line 2, the first and second "of claim 1" should be deleted,

in line 2, both recited "arrays" should be --array--;

(vi) in claim 16, "Any" should be --An—,

in line 1, before "surface", --a—should be inserted,

in line 1, after the second substrate, --wherein the substrate—

should be inserted;

(vii) in claim 17, "Any" should be --The—,

in line 1, "comprising a substrate with" should be replaced with

--wherein the substrate has--;

(viii) in claim 18, "Any" should be --The--,

in line 1, "comprising the substrate" should be replaced with

--wherein the substrate--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 9-13 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 16 are vague since it is unclear as to what Applicant is claiming. The preamble recites an "array of molecules" but the body of the claim does not recite the array of molecules. (Since claims 1 and 16 are vague, claims 2-4, 9-13, 17 and 18 are also vague because they depend from claims 1 or 16.)

Also, claim 2, line 1, claim 9, line 1, and claim 13, line 1, all recite the limitation "array elements". There is insufficient antecedent basis for this limitation in the claim. (It appears to Examiner that Applicant intended to recite --the array of molecules--.) Claim 13 also recites "the at least one". There is insufficient antecedent basis for this limitation also.

Also, claim 13 is vague because it recites "in which the at least one of the array elements present on each of the arrays of claim 1 is not present on any other arrays of claim 1." It is not clear how an array element can be present on "each of the arrays" and yet not be present on "any other arrays". It appears that the claim should recite that each array contains an array element (or a type of array element) that is not present on any other array.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 9 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Vann, 6,635,470.

As a preliminary matter, since the claims are vague as described in the rejection under 112, 2<sup>nd</sup> above, Examiner will indicate how the claims are interpreted for purposes of examination in this Office action.

As to claim 1, although it is unclear as to whether Applicant intends to claim just an array of molecules, or a device comprising an array of molecules and a substrate, for purposes of examination, Examiner will assume that the claimed invention includes (i) an array of molecules on a substrate, and (ii) the substrate.

Turning to the merits of the claims, with respect to claim 1, Vann discloses an array of molecules (i.e., the chemical species on a plurality of fibers 110, see col. 11, lines 36 and 45, and col. 12, lines 34-42 in Vann) created on surface of a substrate (100, see col. 9, lines 39-40), wherein the substrate contains fenestrations (i.e.,

channels defined by channel walls 106, see col. 9, lines 40-41) larger than 1 micrometer in dimensions (col. 10, lines 40-43.)

As to claim 2, the surface of the substrate is made discontinuous by the fenestrations in the substrate (see figure 1, and also figure 11.) (Examiner notes that the recitation of "said array elements deposited on the surface of the substrate" in claim 2, lines 1-2, is treated as a product-by-process limitation, meaning that the prior art only needs to disclose the product in order to meet the limitation. In this case, Vann meets the limitation since Vann discloses the product, i.e., the array elements on the surface of the substrate.)

As to claim 3, Vann discloses 6 fenestrations (see figure 1.)

As to claim 9, the array elements are composed of DNA (see col. 12, line 18).

As to claim 16, Vann discloses that the substrate has a thickness of less than 0.5 mm (col. 10, lines 40-43.)

As to claim 17, the substrate has less than 100 micron thickness (col. 10, line 40.)

As to claim 18, the substrate is glass, (see col. 11, line 21.)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the



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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vann, 6,635,470.

Vann discloses the invention substantially as claimed (see above.)

However, Vann does not disclose that the substrate has 100 or more fenestrations (as claimed in claim 4.) It has been held however that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In the present case, Vann discloses the general conditions of the claims (see above under the 102 rejection.) Vann also discloses that the channels are for exposing the immobilized molecules on fibers (110) to fluid (col. 10, lines 10-15), and the number of fibers (110) vary depending upon the size of the apparatus desired or the number of different chemical species desired to be reacted with the chemical species in the channels (col. 11, lines 45-48.)

Since the general conditions of the claims are disclosed by Vann, and the range of 100 or more fenestrations is an optimum or workable range, discovering the optimum or workable range of number of fenestrations involves only routine skill in the art according to *In re Aller*.

With respect to claim 10, although Vann discloses the dimensions of the channel to be between 10 micrometer to 1000 micrometer, Vann does not disclose that the substrate is less than 0.5 mm thick. However, Vann discloses the general conditions of the claims (see above under the 102 rejection), and the range of less than 0.5 mm in

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thickness is an optimum or workable range and thus involves only routine skill in the art according to *In re Aller*. (Examiner notes that Applicant has not recited in the claims which part of the substrate has the claimed thickness.)

II. Claims 1-4, 9-11, 13, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable Anderson et al., 6,713,309.

Anderson et al. discloses the invention substantially as claimed. More specifically, Anderson et al. discloses an array of molecules (i.e., molecules on the plurality of tubes, see col. 6, lines 45-47) created on surface of a substrate (i.e., inside surface of the plurality of tubes, see col. 6, lines 45-47), wherein the substrate (i.e., the plurality of tubes in col. 6, lines 45-47) contains fenestrations (i.e., the lumen of the tubes, col. 6, lines 45-47)

As to claim 2, the surface of the substrate is made discontinuous by the fenestrations in the substrate (see figure 3.) (Examiner notes that the recitation of "said array elements deposited on the surface of the substrate" in claim 2, lines 1-2, is treated as a product-by-process limitation, meaning that the prior art only needs to disclose the product in order to meet the limitation. In this case, Vann meets the limitation since Vann discloses the product, i.e., the array elements on the surface of the substrate.)

As to claim 9, the array elements are composed of DNA (col.3, lines 62-67.)

As to claim 11, two or more arrays of molecules on a substrate are stacked together (see fig. 3.)

As to claim 13, at least one of the array elements present on each of the array is not present on any other array (col. 16, lines 59-61, and col. 17, lines 1-2.)

As to claim 18, the substrate is glass (col. 6, line 44.)

However, Anderson et al. does not disclose the following. As to claim 1, Anderson does not disclose that the fenestrations are larger than 1 micrometer. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, Anderson discloses the general conditions of the claim as described above, and providing fenestrations larger than 1 micrometer provides an optimum or workable range and thus would involve only routine skill in the art according to *In re Aller*.

Similarly, as to claims 3 and 4, Anderson et al. does not specifically teach that the substrate contains more than 1 but less than 100 fenestration (as claimed in claim 3), or 100 or more fenestrations (as claimed in claim 4.) However, these ranges provide optimum or workable ranges and thus would involve only routine skill in the art according to *In re Aller*.

Likewise, as to claims 10, 16 and 17, Anderson et al. does not specifically teach that the substrate has less than 0.5 mm thickness (as claimed in claims 10 and 16), or less than 100 micron in thickness (as claimed in claim 17.) However, these ranges in thickness are optimum or workable ranges and thus would involve only routine skill in the art according to *In re Aller*.

***Allowable Subject Matter***

Claim 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.

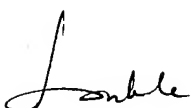
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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LONG V. LE  
SUPERVISORY PATENT EXAMINER  
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